



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/835,711

04/16/2001

Kia Silverbrook

360040-21

7729

7590

10/08/2003

Kia Silverbrook
393 Darling Street
Balmain, NSW, 2041
AUSTRALIA

EXAMINER

LIANG, LEONARD S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 10/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/835,711

Applicant(s)

SILVERBROOK, KIA

Examiner

Leonard S Liang

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 155-170 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 155-170 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 159 is objected to because of the following informalities: the claim states “control line interconnect means the other side...” This is not correct grammar. It will be construed that the claim should state “control line interconnect means on the other side...” Appropriate correction is required.

Claim Rejections - 35 USC § 103

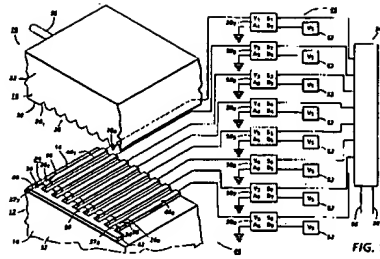
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 155-158, 160-162, and 165-170 are rejected under 35 U.S.C. 103(a) as being unpatentable over Damouth (US Pat 5057855) in view of Hanson (US Pat 4635073).

Damouth discloses:

- {claim 155} An inkjet printhead assembly (figure 1, reference 10); a longitudinally extending inkjet printhead, including a plurality of longitudinally spaced apart power supply points and a plurality of longitudinally spaced apart ground supply points (figure 1, reference 10, 37₁-37₈; abstract; column 5, line 68); at least one longitudinally extending power busbar (figure 1, reference 38); interconnect means configured to connect a plurality of the power supply points to the at least one power supply busbar (figure 1)



- {claim 156} the busbars extend parallel to the inkjet printhead and the interconnect means extend generally transversely between the busbars and the respective power and ground supply points (figure 1, reference 37₁-37₈, 38)
- {claim 160} the interconnect means also includes a plurality of control lines configured to provide the inkjet printhead with control data from a print controller (abstract)
- {claim 161} the interconnect means is in the form of one or more printed circuit boards connected directly to the busbars, with wire bonds connecting the printed circuit boards to the printhead (figure 1)
- {claim 162} the interconnect means is configured such that it need only be connected to the printhead along one edge thereof (figure 1, reference 37₁-37₈)
- {claim 165} an associated ink supply unit for delivering ink to ink supply passages formed in the printhead (column 3, lines 3-8)
- {claim 166} the ink supply unit including: a slot for insertion of the printhead; and a series of elongated chambers for the storage of separate color inks, the chambers being interconnected with the slot for the supply of ink to the printhead, (column 3, lines 3-8) wherein the busbars are disposed along the ink supply unit (figure 1, reference 38)

Art Unit: 2853

- {claim 167} each of the busbars comprises a mechanically stiff conductive rail (figure 1, reference 38; abstract)
- {claim 169} the ink supply unit includes a series of positioning protuberances for accurately locating the power supply busbars and/or interconnect means therewith (figure 1, reference 28; column 4, lines 7-36)
- {claim 170} at least two of the power supply points, wherein the inkjet printhead comprises at least two printhead chips, the inkjet printhead assembly being configured such that each of the at least two power supply points is supplied with power from a different one of the power supply points (figure 1, reference 28, 37₁-37₈, 38)

Damouth differs from the claimed invention in that it does not disclose:

- {claim 155} at least one longitudinally extending ground busbar; and a plurality of the ground supply points to the at least one ground busbar
- {claim 157} the interconnection means includes at least one tape automated bonded (TAB) film
- {claim 158} the TAB film electrically connects with the busbars by means of correspondingly sized noble metal deposited strips formed on the TAB film
- {claim 166} the interconnect means take the form of a tape automated bonding (TAB) strip similarly disposed along an outside of the ink supply unit, the TAB strip including a series of control lines along one surface thereof for mating with a corresponding external series of control lines for receiving control signals from a print controller, the TAB strip further having a repeating series of interconnects

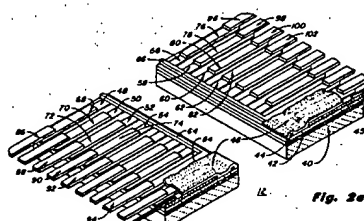
Art Unit: 2853

to the inkjet printhead, the interconnects interconnecting the control lines and the busbars to the printhead

- {claim 168} the interconnect means includes a flexible portion that connects with the inkjet printhead

Hanson discloses:

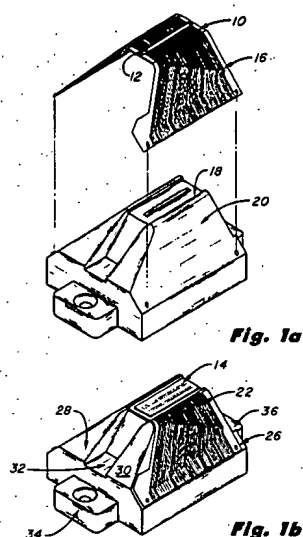
- {claim 155} at least one longitudinally extending ground busbar (figure 2a, reference 64, 66; column 3, lines 42-47)



- {claim 157} the interconnection means includes at least one tape automated bonded (TAB) film (column 3, lines 57-68)
- {claim 158} the TAB film electrically connects with the busbars by means of correspondingly sized noble metal deposited strips formed on the TAB film (column 3, lines 38-68)
- {claim 166} the interconnect means take the form of a tape automated bonding (TAB) strip similarly disposed along an outside of the ink supply unit, the TAB strip including a series of control lines along one surface thereof for mating with a corresponding external series of control lines for receiving control signals from a print controller, the TAB strip further having a repeating series of interconnects to the inkjet printhead, the interconnects interconnecting the control lines and the

Art Unit: 2853

busbars to the printhead (figure 1a, reference 16; column 2, lines 53-68; column 3, lines 10-14; column 3, lines 38-68)



- {claim 168} the interconnect means includes a flexible portion that connects with the inkjet printhead (column 2, lines 53-68)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Hanson into the invention of Damouth. The motivation for the skilled artisan in doing so is to gain the benefit of providing a strong support infrastructure for the ground supply points as well as for the power supply points. The combination naturally suggests interconnect means configured to connect a plurality of the ground supply points to the at least one ground busbar.

3. Claim 159 is rejected under 35 U.S.C. 103(a) as being unpatentable over Damouth (US Pat 5057855) in view of Hanson (US Pat 4635073), as applied to claims 155-158, 160-162, and 165-170 above, and further in view of Meyer et al (US Pat 5612511).

Art Unit: 2853

Damouth, as modified, teaches all limitations of the claimed limitation except for the following: the at least one TAB film is double-sided and includes: power and ground interconnect means on a first side of the TAB film, the power and ground interconnect mean connecting the busbars and their corresponding power and ground supply points; and control line interconnect means on the other side of the TAB film, the control line interconnect means being configured to provide the inkjet printhead with control data from a print controller.

Meyer et al discloses the at least one TAB film is double-sided (column 2, lines 28-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Meyer et al into the invention of modified Damouth. The motivation for the skilled artisan in doing so is to gain the benefit of saving money; making double-sided interconnect flexible circuits is cheaper than making two-layer flex circuits (column 2, lines 16-23). The combination naturally suggests power and ground interconnect means on a first side of the TAB film, the power and ground interconnect mean connecting the busbars and their corresponding power and ground supply points; and control line interconnect means on the other side of the TAB film, the control line interconnect means being configured to provide the inkjet printhead with control data from a print controller.

4. Claim 163 is rejected under 35 U.S.C. 103(a) as being unpatentable over Damouth (US Pat 5057855) in view of Hanson (US Pat 4635073), as applied to claims 155-158, 160-162, and 165-170 above, and further in view of White et al (US Pat 5494698).

Art Unit: 2853

Damouth, as modified, teaches all limitations of the claimed limitation except for the following: the inkjet printhead is in the form of a plurality of printhead chips manufactured by a MEMS processing technique.

White et al discloses the inkjet printhead is in the form of a plurality of printhead chips manufactured by a MEMS processing technique (column 2, lines 25-29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of White et al into the invention of modified Damouth. The motivation for the skilled artisan in doing so is to gain the benefit of reducing scarring and chipping (column 2, lines 25-29).

5. Claim 164 is rejected under 35 U.S.C. 103(a) as being unpatentable over Damouth (US Pat 5057855) in view of Hanson (US Pat 4635073), as applied to claims 155-158, 160-162, and 165-170 above, and further in view of Silverbrook (US Pat 6171875).

Damouth, as modified, teaches all limitations of the claimed limitation except for the following: the inkjet printhead has a plurality of nozzle arrangements, each of which includes a thermal bend actuator device for ejection of ink from a corresponding nozzle.

Silverbrook discloses the inkjet printhead has a plurality of nozzle arrangements, each of which includes a thermal bend actuator device for ejection of ink from a corresponding nozzle (column 55, lines 37-44).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Silverbrook into the invention of modified

Art Unit: 2853

Damouth. The motivation for the skilled artisan in doing so is to gain the benefit of effectively ejecting ink from nozzles.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Toyosawa et al (JP Pat 03038354 A) discloses connecting structure of lead wire of thermal head array.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754.

The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (703) 308-4896. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ls1 LSL


Stephen D. Meier
Primary Examiner